

WHAT IS CLAIMED IS:

1. (currently amended) A radial shaft seal comprising:
a sealing ring comprising a support housing and a shell of elastomer material surrounding at least partially the support housing;
wherein the sealing ring comprises a sealing lip having a sealing edge or sealing surface configured to rest seal-tightly against a rotary machine part;
wherein the sealing lip has a first conical surface at a first side facing a medium to be sealed and a second conical surface at a second side facing a surrounding atmosphere, wherein the first and second conical surfaces adjoin the sealing lip;
wherein between the rotary machine part and the first conical surface a first contact surface angle is formed and wherein between the rotary machine part and the second conical surface a second contact surface angle is formed;
wherein the first contact surface angle is adjusted to be between approximately 0 degrees and approximately 30 degrees and the second contact surface angle is adjusted to be between approximately 30 degrees up to approximately 70 degrees;
wherein the first contact angle causes during operation of the sealing ring a conveying action of the medium to the sealing edge so that the sealing edge is cooled and lubricated by the medium;
wherein the first conical surface has a first conveying structure that improves the conveying action of the medium toward the sealing edge for cooling and lubricating the sealing edge.
2. (original) The radial shaft seal according to claim 1, wherein the sealing lip is a monolithic part of the shell.
3. (original) The radial shaft seal according to claim 1, wherein the sealing lip and the shell are comprised of different materials, respectively.
4. (original) The radial shaft seal according to claim 1, further comprising a support ring against which support ring the sealing ring rests, wherein the support ring is arranged on a side of the sealing ring facing the surrounding atmosphere.
5. (original) The radial shaft seal according to claim 4, wherein the support ring has an L-shaped cross-section.
6. (original) The radial shaft seal according to claim 4, wherein the support

ring comprises an axial part resting against the sealing lip.

7. (original) The radial shaft seal according to claim 6, wherein the axial part of the support ring has a conical support surface tapering in a direction toward the medium to be sealed.

8. (original) The radial shaft seal according to claim 7, wherein the conical support surface has an angle matching the first contact surface angle.

9. (original) The radial shaft seal according to claim 6, wherein the support ring comprises a radial part, wherein the support housing and the shell rest against the radial part of the support ring.

10. (original) The radial shaft seal according to claim 9, wherein the radial part of the support ring extends essentially across an entire radial width of the sealing ring.

11. (currently amended) The radial shaft seal according to claim 1, wherein ~~at least one of the first conical surface and the second conical surface has at least one a~~ second conveying structure.

12. (currently amended) The radial shaft seal according to claim 11, wherein the first and second ~~at least one~~ conveying structures are ~~structure is~~ selected from the group consisting of grooves, wave-shaped profiles, and ribs.

13. (currently amended) The radial shaft seal according to claim 11, wherein the second conveying structure ~~on~~ of the second conical surface is oriented opposite to the first conveying structure of the first conical surface.

14. (original) The radial shaft seal according to claim 1, wherein the sealing lip is prestressed by a spring force in a direction toward the rotary machine part.

15. (canceled)

16. (canceled)